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10/724,118	12/01/2003	Tsutomu Shimotoyodome	OKI.600	9919

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EXAMINER	
PUENTE, EVA Y	

ART UNIT	PAPER NUMBER
2611	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/724,118	SHIMOTOYODOME, TSUTOMU	
	Examiner	Art Unit	
	EVA Y. PUENTE	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 November 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *8-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *8-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 11/21/08 have been fully considered but they are not persuasive. Examiner has thoroughly reviewed Applicant's arguments but firmly believes that the cited reference reasonably and properly meet the claimed limitation as rejected.

Applicant's argument – (1) Prior art Lyon does not specify the values of coefficients of a digital filter at the onset of a stopping state of a generated signal. (2) Prior art Karjalainen et al does not recognize that the generation of harmonics during stopping of an output signal generated using an IIR filter can be minimized by selecting coefficients as to main the frequency of the output signal as the output signal transitions to being stopped.

Examiner's response – (1) Prior art Lyon disclose a digital IIR filter (Fig. 6A), wherein comprises feedback delays (605 and 606) coupled to multipliers (601 and 602), and provides an output signal (output Y signal). The multiplier coefficients (B1 and B2) are controlled by a control unit (620). Coefficients B1 and B2 are calculated by equations shown in block 620 and also described in (Col 6, L47-64). Frequency parameter (f) and damping parameter (d) in equations B1 and B2 having certain range and are varied depending on different situations (Col 5, L18-34). It is well known in the technology an IIR filter is time and coefficients dependent. The IIR filter operates corresponding to different states, including initial state, steady-state, transition state, and stopping state. With a given range of frequency parameter (f) and damping

parameter (d), it is inherent that predetermined coefficients are calculated depending on different states. (2) In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., preventing harmonics and improving signal quality) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). Therefore, whether Karjalainen et al is concerned about harmonics in IIR filter or not is not relevant since claim is only directed to maintain frequency of the output signal as being transition to being stopped. In addition, Applicant appears to argue that Karjalainen et al is concerned with different environment than the current application. However, the question of whether a reference is analogous art is not relevant to whether that reference anticipates. A reference may be directed to an entirely different problem than the one addressed by the inventor, or may be from an entirely different field of endeavor than that of the claimed invention, yet the reference is still anticipatory if it explicitly or inherently discloses every limitation recited in the claims (Please see MPEP §2131.05 [R-5]). As explained in the previous office action, it is well known in the art that the location of poles on a Z plane represent the stability of the IIR filter. The IIR filter is only marginally stable when the poles are located on the unit circle of the Z plane. The output signal is oscillating between upper and lower bounds. Moving the poles toward to the center of the unit circle reduces decay time of the output signal and increase stability. Karjalainen et al disclose that the length of decay time depends on the locations of a pair of poles calculated from the z-

transform function. To shift the locations of the pair of poles from unit circle to inside the unit circle while maintain the degrees of angle is needed to shorten the decay time ([0040-0041]; [0087]; Fig. 4 and 5). Therefore, it is obvious to one of ordinary skill in the art to combine the IIR filter teaching of Lyon with the poles relocation teaching of Karjalainen et al. to change the filter coefficients corresponding to the poles on the unit circle to coefficients corresponding to poles within the unit circle. The decay time is shorten and the frequency of the output signal is maintained. By doing so, accurately control the coefficients in an IIR filter and provide better IIR filter design.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lyon (US 5,502,663) in view of Karjalainen et al (US 2003/0099365).

a) Regarding claim 8, Lyon discloses a signal generator that uses an IIR type digital filter (Fig. 6A shows a canonic form IIR filter) having multipliers (601 and 602) in a feedback loop to provide an output signal (output Y signal), the signal generator comprising:

a control unit that provides coefficients for the multipliers during a stable oscillating state (620), and said control unit changes the coefficients to predetermined

values (Col 6, L51-64; Col 11, L16-22; it is inherent that the coefficients are adjusted depends on different states).

Lyon discloses all the subject matters above except for the specific teaching of maintain the signal frequency at outputting state.

However, it is common knowledge and well known in the art that the location of poles on a Z plane represent the stability of the IIR filter. The IIR filter is only marginally stable when the poles are located on the unit circle of the Z plane. The output signal is oscillating between upper and lower bounds. That is, the amplitude of output signal has a constant envelope, which corresponds to the claimed stable oscillating state. Moving the poles toward to the center of the unit circle reduces decay time of the output signal and increase stability. That is, the amplitude of the output signal is reduced while the frequency is maintained, which corresponds to the claimed stopping state. Karjalainen et al also disclose that the length of decay time depends on the locations of a pair of poles calculated from the z-transform function. To shift the locations of the pair of poles from unit circle to inside the unit circle while maintain the degrees of angle is needed to shorten the decay time ([0040-0041]). An example is given in P[0087], and depicts in Fig. 4 and 5. Therefore, it is obvious to one of ordinary skill in the art to combine the IIR filter teaching of Lyon with the poles relocation teaching of Karjalainen et al. to change the filter coefficients corresponding to the poles on the unit circle to coefficients corresponding to poles within the unit circle. The decay time is shorten and the frequency of the output signal is maintained. By doing so, accurately control the coefficients in an IIR filter and provide better IIR filter design.

b) Regarding claim 9, Karjalainen et al disclose wherein the predetermined values of the coefficients are provided so that poles of a transfer function of the IIR type digital filter are set to an inside of a unit circle on a Z plane (Fig. 4; P[0087]).

c) Regarding claim 10, Karjalainen et al disclose wherein a ratio of a value of the poles on an imaginary axis to a value of the poles on a real axis before the coefficients are changed, and a ratio of a value of the poles on the imaginary axis to a value of the poles on the real axis after changing of the coefficients, are set to an equal value ([0040-0041], Fig. 4).

4. Claims 11-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rambaud et al (US 6,980,592) in view of Karjalainen et al (US 2003/0099365).

a) Regarding claims 11 and 14, Rambaud et al discloses a signal generator that uses an IIR type digital filter (Fig. 4) having multipliers (422,424,426,428,430,432,434,436,438) in a feedback loop to provide an output signal (output and feedback line 9), the signal generator comprising:

a selector that selects and outputs coefficients for the multipliers during a stable oscillating state, the coefficients being selected from a plurality of set values which have been preset (304; Col 5, L8-20); and said selector changes the coefficients to predetermined values (Col 4, L33-61; it is inherent that a set of coefficients is selected depends on a specific state).

Rambaud et al discloses all the subject matters above except for the specific teaching of maintain the signal frequency at outputting state.

However, it is common knowledge and well known in the art that the location of poles on a Z plane represent the stability of the IIR filter. The IIR filter is only marginally stable when the poles are located on the unit circle of the Z plane. The output signal is oscillating between upper and lower bounds. That is, the amplitude of output signal has a constant envelope, which corresponds to the claimed stable oscillating state. Moving the poles toward to the center of the unit circle reduces decay time of the output signal and increase stability. That is, the amplitude of the output signal is reduced while the frequency is maintained, which corresponds to the claimed stopping state. Karjalainen et al also disclose that the length of decay time depends on the locations of a pair of poles calculated from the z-transform function. To shift the locations of the pair of poles from unit circle to inside the unit circle while maintain the degrees of angle is needed to shorten the decay time ([0040-0041]). An example is given in P[0087], and depicts in Fig. 4 and 5. Therefore, it is obvious to one of ordinary skill in the art to combine the IIR filter teaching of Rambaud et al with the poles relocation teaching of Karjalainen et al. to change the filter coefficients corresponding to the poles on the unit circle to coefficients corresponding to poles within the unit circle. The decay time is shorten and the frequency of the output signal is maintained. By doing so, accurately control the coefficients in an IIR filter and provide better IIR filter design.

b) Regarding claims 12 and 15, Karjalainen et al disclose wherein the predetermined values of the coefficients are provided so that poles of a transfer function of the IIR type digital filter are set to an inside of a unit circle on a Z plane (Fig. 4; P[0087]).

c) Regarding claims 13 and 16, Karjalainen et al disclose wherein a ratio of a value of the poles on an imaginary axis to a value of the poles on a real axis before the coefficients are changed, and a ratio of a value of the poles on the imaginary axis to a value of the poles on the real axis after changing of the coefficients, are set to an equal value ([0040-0041], Fig. 4).

Conclusion

5. THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eva Y Puente whose telephone number is 571-272-3049. The examiner can normally be reached on M-F, 7:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh Fan can be reached on 571-272-3042. The fax phone number for the

organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Eva Yi Puente
/E. Y. P./
Examiner, Art Unit 2611

February 9, 2009

/Chieh M Fan/

Supervisory Patent Examiner, Art Unit 2611